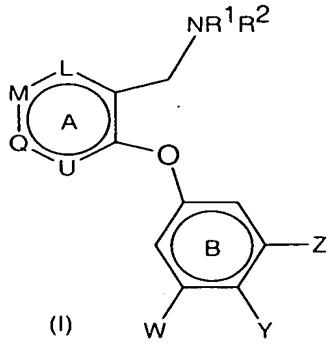
Claims

1. A compound of general formula (I), pharmaceutically acceptable salts, solvates or polymorphs thereof;



(I)

wherein;

L and U, which may be the same or different, are -N-, $-N^+(-O^-)-$ or -C(H)-;

M and Q, which may be the same or different, are -N-, $-N^+(-O^-)-$ or $-C(R^4)-$;

wherein ring A contains 1 or 2 nitrogen atoms, and wherein when L, U, M or Q is $-N^+(-O^-)-$, ring A contains no other nitrogen atom;

R^1 and R^2, which may be the same or different, are hydrogen, C_{1-6}alkyl, $(CH_2)_m(C_{3-6}$cycloalkyl) wherein m = 0, 1, 2 or 3, or R^1 and R^2 together with the nitrogen to which they are attached form an azetidine ring;

W, Y and Z, which may be the same or different, are hydrogen, halogen, C_{1-6}alkyl, CF_3, OCF_3, C_{1-4}alkylthio or C_{1-4}alkoxy; or Y and Z are linked so that, together with the interconnecting atoms, Y and Z form a fused 5 to 7-membered carbocyclic or heterocyclic ring which may be saturated, unsaturated or aromatic, and wherein when Y and Z form a heterocyclic ring, in addition to carbon atoms, the linkage contains one or two heteroatoms independently selected from oxygen, sulfur and nitrogen; and wherein W, Y and Z are not all hydrogen;

and

each R^4 is independently:

A-X, wherein A = -$(CH_2)_p$- where p is 0, 1 or 2; X is hydrogen, $CONR^6R^7$, $SO_2NR^6R^7$, $SO_2NHC(=O)R^6$, hydroxy, C_{1-4}alkoxy, $NR^8SO_2R^9$, NO_2, NR^6R^{11}, CN, CO_2R^{10}, SR^{10}, $S(O)R^9$ or SO_2R^{10}; R^6, R^7, R^8 and R^{10} which may be the same or different, are hydrogen or C_{1-6}alkyl optionally substituted independently by one or more R^{12}; R^9 is C_{1-6} alkyl optionally substituted independently by one or more R^{12}; R^{11} is hydrogen, C_{1-6} alkyl optionally substituted independently by one or more R^{12}, $C(O)R^6$, CO_2R^9, $C(O)NHR^6$ or $SO_2NR^6R^7$; R^{12} is fluoro, hydroxy, CO_2H, C_{3-6}cycloalkyl, NH_2, $CONH_2$, C_{1-6}alkoxy, C_{1-6}alkoxycarbonyl or a 5- or 6-membered heterocyclic ring containing 1, 2 or 3 heteroatoms selected from N, S and O optionally substituted independently by one or more R^{13}; or R^6 and R^7, together with the nitrogen to which they are attached, form a 4-, 5- or 6-membered heterocyclic ring optionally substituted independently by one or more R^{13}; or

a 5- or 6-membered heterocyclic ring containing 1, 2 or 3 heteroatoms selected from N, S and O, optionally substituted independently by one or more R^{13};

wherein R^{13} is hydroxy, C_1-C_4alkoxy, fluoro, C_1-C_6alkyl, haloalkyl, haloalkoxy, $-NH_2$, $-NH(C_1$-C_6alkyl) or $-N(C_1$-C_6alkyl$)_2$; or

when both M and Q are CR^4, the R^4 groups are linked so that together with the interconnecting atoms, the R^4 groups form a fused 5- to 7-membered carbocyclic or heterocyclic ring which may be saturated, unsaturated or aromatic.

2. A compound according to claim 1 wherein only one of L, U, M and Q is -N- or $-N^+(-O^-)$-.

3. A compound according to claim 2 wherein L is -C(H)-.

4. A compound according to claim 1 wherein R^1 and R^2, which may be the same or different, are hydrogen or C_1-C_6alkyl, or R^1 and R^2, together with the nitrogen to which they are attached, form an azetidine ring.

5. A compound according claim 1 wherein R^1 is methyl and R^2 is hydrogen or methyl, or R^1 and R^2, together with the nitrogen to which they are attached, form an azetidine ring.

6. A compound according to claim 1 wherein R^1 is methyl and R^2 is hydrogen or methyl.

7. A compound according to claim 1 wherein W is hydrogen, C_{1-6}alkyl, C_{1-4}alkoxy or halogen.

8. A compound according to claim 1 wherein W is hydrogen, methyl or ethyl; and Y and Z, which may be the same or different, are hydrogen, methyl, ethyl, CF_3, OCF_3, methylthio, ethylthio, methoxy, ethoxy, chloro, fluoro or bromo; or Y and Z are linked so that, together with the interconnecting atoms, Y and Z form a fused 5 to 7-membered carbocyclic or heterocyclic ring which may be saturated, unsaturated or aromatic, and wherein when Y and Z form a heterocyclic ring, in addition to carbon atoms, the linkage contains one or two heteroatoms independently selected from oxygen, sulfur and nitrogen; wherein W, Y and Z are not all hydrogen.

9. A compound according to claim 1 wherein W is hydrogen; and Y and Z, which may be the same or different, are hydrogen, fluoro, chloro, methyl, ethyl, methylthio, ethylthio, methoxy or ethoxy; or Y and Z are linked so that, together with the interconnecting atoms, Z and Y form a fused 5 to 7-membered heterocyclic ring containing one or more sulfur atoms; wherein Y and Z are not both hydrogen.

10. A compound according to claim 1 wherein when Y and Z are linked so that, together with the interconnecting atoms, Z and Y form a fused 5 to 7-membered heterocyclic ring containing one or more sulfur atoms, the linkages forming the fused ring are $-S(CH_2)_2-$, $-CH_2S-CH_2-$ or $-S(CH_2)_2O-$ wherein either end of these linkages correspond to either group Y or Z.

11. A compound according to claim 1 wherein, when present, each R^4 is independently $-(CH_2)_p-X$, where p is 0, 1 or 2; X is hydrogen, $CONR^6R^7$, $SO_2NR^6R^7$, $SO_2NH(C=O)R^6$, hydroxy, C_{1-4}alkoxy, $NR^8SO_2R^9$, NO_2, NR^6R^{11}, CN, CO_2R^{10}, SR^{10}, $S(O)R^9$ or SO_2R^{10}; wherein R^6, R^7, R^8, R^{10}or R^{11}, which may be the same or different, are hydrogen or C_{1-6}alkyl; and R^9 is C_{1-6}alkyl.

12. A compound according to claim 1 wherein, when present each R^4 is independently $-(CH_2)_p-X$, where p is 0 or 1; X is hydrogen, $CONR^6R^7$, $SO_2NR^6R^7$, $NR^8SO_2R^9$, hydroxy or NR^6R^{11}; wherein R^6, R^7, R^8, or R^{11}, which may be the same or different, are hydrogen or C_{1-6}alkyl; and R^9 is C_{1-6}alkyl.

13. A compound according to claim 1 wherein the compound is selected from:
N-methyl-*N*-({4-[4-(methylsulfanyl)phenoxy]-3-pyridinyl}methyl)amine,
N-{[4-(2,3-dihydro-1-benzothien-5-yloxy)-3-pyridinyl]methyl}-*N*-methylamine,
N-({4-[3-chloro-4-(methylsulfanyl)phenoxy]-3-pyridinyl}methyl)-*N*-methylamine,
N-methyl-*N*-({3-[4-(methylsulfanyl)phenoxy]-4-pyridinyl}methyl)amine,
N-methyl-*N*-({3-[3-methyl-4-(methylsulfanyl)phenoxy]-4-pyridinyl}-methyl)amine,
N-{[4-(2,3-Dihydro-1,4-benzoxathiin-7-yloxy)-6-methyl-3-pyridinyl]methyl}-*N*-methylamine,
N-methyl-*N*-({6-methyl-4-[3-methyl-4-(methylsulfanyl)phenoxy]-3-pyridinyl}methyl)amine,
N-({4-[3-chloro-4-(methylsulfanyl)phenoxy]-3-pyridinyl}methyl)-*N*,*N*-dimethylamine,
N-({4-[3-fluoro-4-(methylsulfanyl)phenoxy]-3-pyridinyl}methyl)-*N*,*N*-dimethylamine,
N,*N*-dimethyl-*N*-({3-[4-(methylsulfanyl)phenoxy]-4-pyridinyl}methyl)amine,
N-{[4-(2,3-dihydro-1-benzothien-5-yloxy)-3-pyridinyl]methyl}-*N*,*N*-dimethylamine,

N-({4-[3-Methoxy-4-(methylsulfanyl)phenoxy]-3-pyridinyl}methyl)-*N*,*N*-dimethylamine,
N,*N*-dimethyl-*N*-({4-[4-(trifluoromethyl)phenoxy]-3-pyridinyl}methyl)amine,
N,*N*-dimethyl-*N*-({4-[4-(methylsulfanyl)phenoxy]-3-pyridinyl}methyl)amine,
and *N*,*N*-dimethyl-*N*-({4-[3-methyl-4-(methylsulfanyl)phenoxy]-3-pyridinyl}-methyl)amine.

14. A composition comprising a compound of formula (I) of any one of claims 1-13, or pharmaceutically acceptable salts, solvates or polymorphs thereof, and a pharmaceutically acceptable diluent or carrier.

15. A therapeutic method comprising administering a compound of formula (I) of any one of claims 1-13, or a pharmaceutically acceptable salt, solvate or polymorph thereof to a subject having a need of treatment or prevention of a disorder in which the regulation of monoamine transporter function is implicated.

16. A method of claim 15, wherein the disorder is selected from: hypertension, depression, generalized anxiety disorder, phobias, post-traumatic stress syndrome, avoidant personality disorder, premature ejaculation, eating disorders, obesity, chemical dependencies, cluster headache, migraine, pain, Alzheimer's disease, obsessive-compulsive disorder, panic disorder, memory disorders, Parkinson's diseases, endocrine disorders, vasospasm, cerebellar ataxia, gastrointestinal tract disorders, negative symptoms of schizophrenia, premenstrual syndrome, fibromyalgia syndrome, stress incontinence, Tourette's syndrome, trichotillomania, kleptomania, male impotence, attention deficit hyperactivity disorder (ADHD), chronic paroxysmal hemicrania, headache (associated with vascular disorders), emotional lability, pathological crying, sleeping disorder (cataplexy) and shock.

17. A method of claim 15, wherein the disorder is selected from; depression, attention deficit hyperactivity disorder, obsessive-compulsive disorder, post-traumatic stress disorder, substance abuse disorders and sexual dysfunction

18. A method of claim 15, wherein the disorder is premature ejaculation.